

REMARKS

The Office Action of August 31, 2004 has been received and carefully reviewed. It is submitted that, by this Communication, all bases of rejection and objection are traversed and overcome. Upon entry of this Communication, claims 1-25 remain in the application and new claims 26-29 have been added to set forth additional specific embodiments of Applicants' invention. Reconsideration of the claims as amended is requested.

Accompanying this Communication are replacement sheets of formal drawings. These replacement sheets are being submitted per the Examiner's request that Figure 5 be a larger scale of the original drawing. Fig. 5 has been replaced per the Examiner's request.

Claims 3, 4, 9, 10, 16, 17, and 23 stand rejected under 35 U.S.C 112, first paragraph, as failing to comply with the written description requirement. The Examiner asserted that the claims contained subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventors had possession of the claimed invention.

Applicants have amended the specification to recite the language of claims 3, 4, 9, 10, 16, 17 and 23. As such, Applicants respectfully submit that the rejection of claims 3, 4, 9, 10, 16, 17 and 23 under 35 U.S.C. 112, first paragraph, has been traversed and overcome.

Claims 1-4, 8, 11-15 and 18-20 stand rejected under 35 U.S.C. 103(a) as being obvious over U.S. patent 5,804,095 ('095) in view of U.S. patents 3,904,448 ('448); 6,328,819 ('819); and 1,838,195 ('195).

The Examiner asserts that '095 teaches a magnetorheological (MR) fluid formed by adding nitrided iron carbonyl particles having an average particle distribution of 3.845 microns to an MR fluid carrier. The Examiner notes, however, that the '095 patent does not teach how the particles were nitrided nor that the particles have an oxidation resistant surface. Further, the Examiner states that '448 and '819 teach the nitrided particles would have an improved oxidation resistance since the nitride coating forms an oxidation resistant surface to the nitride metal particles. Still further, the Examiner states that '819 and '195 teach the standard process for nitriding is to heat a metal article in an

atmosphere mainly comprising ammonia at a temperature and at a time sufficient to form a nitride coating on the surface.

Applicants respectfully submit that claims 1, 12 and 18 have been amended to recite that the particles are exposed to a “nitrogen gas environment,” thereby excluding the ammonia atmosphere suggested by the ‘448, ‘819 and ‘195 patents. Support for the “nitrogen gas” environment may be found in the specification as filed on page 7, paragraph 0027. Further, the ‘448 patent **teaches away** from using a pure nitrogen gas atmosphere to nitride the particles by stating, “the use of a nitrogen-containing compound gas, **not nitrogen gas**, is a requisite of the method of the invention.” (emphasis added). As the improved oxidation resistance as taught in ‘448 results from a nitrogen-containing compound gas and **not** a nitrogen gas, one skilled in the art would not be led to believe that a nitrogen gas would produce the same oxidation resistant surface as a nitrogen-containing compound gas.

Still further, the ‘819 patent does not teach that a nitrogen gas would produce an oxidation resistant coating, rather that the gas atmosphere used to form the oxidation resistant coating contains “only ammonia.”

Applicants also submit that one skilled in the art would know that nitriding with nitrogen gas is used to enhance the magnetic properties of permanent magnet materials. The combination of this knowledge with the teaching of the ‘448 patent would not lead one skilled in the art to believe that nitriding via nitrogen gas would inhibit oxidation.

As none of the cited art teaches or suggests using a nitrogen gas atmosphere to improve the oxidation resistance of particles, the Applicants respectfully submit that even if one skilled in the art combined the teachings of ‘095, ‘448, ‘819, and ‘195, they would not produce the Applicants’ invention as recited in claims 1, 12, 18 and in those claims depending therefrom. For all the reasons stated above, it is submitted that Applicants’ invention as defined in amended claims 1-4, 8, 11-15 and 18-20 is not anticipated, taught or rendered obvious by the cited references, either alone or in combination, and patentably defines over the art of record.

Claims 1-9, 11-15 and 18-25 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. patent 6,027,664 (‘664) in view of U.S. patents 5,804,095 (‘095); 3,904,448 (‘448); 6,328,819 (‘819); and 1,838,195 (‘195). The Examiner states that ‘664

teaches a bimodal MR fluid having a first portion of particles having a size between 1-10 microns and a second portion of particles having a size 3-15 times the size of the first portion. The Examiner notes that the '664 patent does not teach that the particles can be nitrided. The Examiner states it would have been obvious to nitride the iron based metal magnetic particles as taught by '819 and '195 to form bimodal nitrited particles having an improved oxidation resistance and then adding the particles to an MR carrier fluid because '095 teaches nitride coated particles in MR fluids.

Applicants respectfully submit that the Examiner's assertion that '664 **does not teach** that the particles can be nitrided is accurate. As such, one skilled in the art would not be inclined to combine the teachings of '819, '195, and '448 (which teach nitriding particles) with '664, which teaches bimodal MR fluids.

However, assuming *arguendo* one skilled in the art would combine such teachings, he would not produce the method as defined by Applicants in claims 1, 12 and 18. First, while '095 teaches nitriding particles used in MR fluids, it does not teach how such particles are nitrided, nor that they have an oxidation resistant surface. Further, reiterating the arguments made above, '819, '195, and '448 do not teach (and '448 teaches away from) using a nitrogen gas environment (as recited by the Applicants) to produce the oxidation resistant particles. Therefore, a combination of the teaching of the cited prior art would not result in the Applicants' invention as defined in independent claims 1, 12 or 18. For all the reasons stated above, it is submitted that Applicants' invention as defined in claims 1-9, 11-15 and 18-21 is not anticipated, taught or rendered obvious by the cited references, either alone or in combination, and patentably defines over the art of record.

Further, claim 22 has been amended to recite that "one of the first and second ferromagnetic particles have a surface characterized by nitrogen-containing compounds associated therewith." This change is supported in the specification as filed at page 10, paragraph 0035. Applicants respectfully submit that amended claim 22 now recites that a portion ("one of") of the magnetic particles are nitrided. According to the Examiner in the Office Action, "there is no suggestion in the art that only part of the magnetic particles should be nitrided." As such, Applicants respectfully submit that amended claim 22 and those claims depending therefrom are free of the teachings of the prior art.

The Examiner stated that claims 10, 16, and 17 would be allowable if rewritten to overcome the rejections under 35 U.S.C. 112 and to include all of the limitations of the base claim and any intervening claim. Claims 10, 16 and 17 have been so rewritten in independent form so as to make them suitable for allowance. Further, claims 26-28 have been added to depend from claims 10, 16 and 17, respectively, to set forth additional specific embodiments of Applicants' invention.

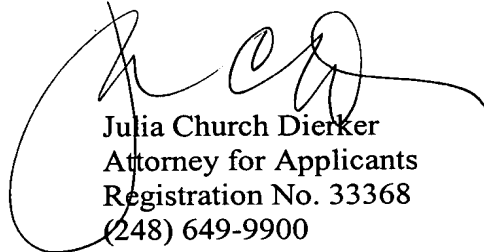
New claim 29 has been added to set forth an additional specific embodiment of Applicants' invention. Support for the addition of claim 29 may be found in the specification as filed on page 10, paragraph 0035.

In summary, claims 1-25 remain in the application and new claims 26-29 have been added. It is submitted that, through this amendment, Applicants' invention as set forth in these claims is now in a condition suitable for allowance.

Further and favorable consideration is requested. If the Examiner believes it would expedite prosecution of the above-identified application, she is cordially invited to contact Applicants' Attorney at the below-listed telephone number.

Respectfully submitted,

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Dated: November 30, 2004
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